Image

60137-027

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Bellasalma	Group Art Unit:	1722
Serial No.:	09/924,285	Examiner:	Heitbrink, Timothy W.
Filed:	August 8, 2001		
Title:	FLUSHLESS MOLD VALVE ASSEMBLY		

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Subsequent to the filing of the Notice of Appeal on October 27, 2003, Appellant now submits its brief. A check in the amount of $330 is enclosed for the fees. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

REAL PARTY IN INTEREST

The real party in interest is **Masco Corporation**, the assignee of the entire right and interest in this Application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-32 stand finally rejected.

STATUS OF THE AMENDMENTS

All amendments have been entered.

SUMMARY OF THE INVENTION

A mix head 20 mixes a multiple of fluid materials components e.g., matrix, to form a hardenable or settable mixture which is then discharged into the mold cavity 24 through a valve assembly 26. The matrix begins to set upon mixture and the valve assembly 26 minimizes matrix remnants such that the valve assembly 26 need not be flushed after each cycle injection. *[See specification paragraphs 22-23.]*

The valve assembly 26 includes a coupler 28 to removably attach the mix head 20 to the mold assembly 22. The coupler 28 is attached to a mold port 30 such that the matrix from the mix head 20 communicates through a fluid flow passage 32 and to the mold cavity 24. The fluid flow passage 32 includes a first flow passage 34 which defines a first axis 35 and a second flow passage 36 substantially perpendicular to the first axis 35. *[See specification paragraph 24.]*

A piston 38 which is rectilinear in cross section (Figure 3) is movable within the first flow passage 34 along the first axis 35. The piston 38 is substantially square in cross-section (Figure 3) such that the piston 38 fits closely within the first flow passage 34. By providing the piston 38 with straight walls, remnants of the matrix are more effectively wiped from the passage 34 and driven into the mold cavity 24. In addition, the piston 38 forms an effective seal at the intersection between the first flow passage 34 and the second flow passage 36. *[See specification paragraph 25.]*

Figure 5A illustrates the matrix flow path (illustrated schematically by arrows m) during matrix injection into the mold cavity. After injection is complete, a second piston 44 is driven to seal the third flow passage 56 (Figure 5B). As illustrated in Figure 5B, the second piston extends from the mix head second flow passage 36' and into the coupler 28 second flow passage 36. In other words, the second piston 44 meets the first flow passage 39 in a substantially perpendicular orientation. Simultaneously remnants of the matrix which remain in the second flow passage 36', 36 are driven into the first flow passage 34 by the piston 44. Notably, the second piston 44 has been driven past the mix head second flow passage 36' and into the coupler flow passage 36. In other words, the second piston 44 assures that the second flow passage 36' is clear of matrix remnants. *[See specification paragraphs 31-32.]*

Referring to Figure 5C, piston 38 is driven toward the mold port 30 by actuator 40. Notably, the orientation of the first piston 38 and second piston 44 provides for the first piston 38 to wipe matrix remnants from a face of the second piston 44. The seal between piston 38 and mold port 30

is now complete and the molded article cures within the cavity 24. The coupler 28 is thus clear of remnants without the heretofore necessity of flushing. *[See specification paragraph 33.]*

ISSUES

A. 35 U.S.C. 102(b)

Is the final rejection of Claims 1, 3-9, 12, and 14-20 under 35 U.S.C. §102(b) proper as being anticipated by *Nennecker (5,498,151)?*

Is the final rejection of Claims 1, 3-10, 12, and 14-21under 35 U.S.C. §102(b) proper as being anticipated by G*umery (5,435,710)?*

B. 35 U.S.C. 102(b)

Is the final rejection of Claims 2 and 13 under 35 U.S.C. §103(a) proper as being unpatentable over *Nennecker?*

Is the final rejection of Claims 2 and 13 under 35 U.S.C. §103(a) proper as being unpatentable over *Gumery (5,435,710)?*

GROUPING OF CLAIMS

I. Claims 1-7, 9-18, and 20-32. Claims 2-7, 9-19, 20, and 21-32 all stand or fall together with independent claim 1 for purposes of this appeal.

II. Claims 2 and 13 stand or fall together for purposes of this appeal, i.e., claims 2 and 13 stand or fall independently of claim 1 for purposes of this appeal.

III. Claims 8 and 19 stand or fall together for purposes of this appeal, i.e., claims 8 and 19 stand or fall independently of claim 1 for purposes of this appeal.

ARGUMENTS

A. 35 U.S.C. 102

i) Claim 1

The rejection of Group 1 as represented by Claim 1 turns upon the interpretation of "rectilinear in cross-section." It is uncontested that both *Nennecker* and *Gumery* disclose only conventional cylindrical pistons. All of the Examiner's rejections require that a cross-section of an admitted cylindrical piston be interpreted to disclose the rectilinear cross-section.

The Examiner, in the Advisory Action, in an attempt to support the rejections over *Nennecker* and *Gumery* makes much of suggesting that Appellant's claims do not specifically state where the cross-section is taken. To do so, the Examiner suggests an interpretation which is repugnant to the ordinary meaning of "cross-section". The Examiner attempts to suggest that if the cross-section is taken along the longitudinal axis of the piston, such a cross-section "even along a straight cylindrical body or piston" would be rectilinear. Aside from the fact that this interpretation is contrary to the specification of the present invention (which illustrates the cross-section) in which the claims are to be read in light of, the ordinary meaning of cross-section is a lateral cross-section across an axis. For example *dictionary.com* defines cross-section as (emphases added):

> **cross section** *n.*
>
> **a.** A section formed by a plane cutting through an object, **usually at right angles to an axis.**
>
> b. A piece so cut or a graphic representation of such a piece.

The Examiner's interpretation is simply not reasonable – particularly as this is a section 102(b) rejection – as quite a bit of creative interpretation must be utilized by the Examiner to support the rejection. Such an unreasonable interpretation is improper and Appellant respectfully requests that the rejection be withdrawn.

ii) *Claim 8*

Claim group II, as represented by Claim 8 recites that "said second piston is substantially circular in cross section." As further support to Appellant's argument with regard to the proper interpretation of "cross-section", Appellant points to the terminology within claim 8. Were the

Examiner's interpretation reasonable, the interpretation would also apply to claim 8. However, the only interpretation of a cross-section that will obtain a substantially circular cross-section of a cylindrical piston is a cross-section across the piston axis as Appellant argues above.

The Examiner is basically arguing that the cross-section may be taken anywhere so as to meet the limitation of Appellant's claims. While it is well settled that terms in a claim are to be given their broadest reasonable interpretation in proceedings before the PTO, this interpretation must be consistent with the specification, with the claim language being read in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Bond*, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed Cir. 1990); *In re Sneed*, 710 f.2d 1544, 1548, 218 USPQ 385, 388 (Fed Cir. 1983). Here, the Examiner is suggesting an interpretation which is not consistent with the Appellant's specification and is doing so differently to an independent and a dependent claim within the same claim set. This is improper, again especially considering that the Examiner is still utilizing a section 102(b) rejection. Appellant respectfully requests that the rejection be withdrawn.

B. 35 U.S.C. 103

i) Claim 2

Claim group III, as represented by Claim 2 recites "said piston is substantially square in cross-section." Here the Examiner admits that neither *Nennecker* (23 July 2003 office action, page 3) nor *Gumery* (23 July 2003 office action, page 4) does not show a piston that is square in cross section. Again, the unreasonableness of the Examiner's initial interpretation of where the cross-section is taken is exposed by the properly located cross-section for this rejection.

In an attempt to overcome the limitations of the cited references, the Examiner suggests that changes in shape not effecting the operation of the device is considered within the skill of the ordinary artisan. The Examiner points to the Dailey case, however, this case is a 1966 case from the United States Court of Customs and Patent Appeals and is not binding case law at all at this point. The Examiner is essentially suggesting that it is inherently obvious to change the shape of an element without any support in the prior art. This is improper. Moreover, as distinguished from the Dailey case, the rectilinear shape of Appellant's device does affect operation and provides numerous advantages which are not suggested by the cited references. Some of these advantages are disclosed

in paragraph [25] of the present application. Appellant respectfully requests that the rejections be withdrawn.

CLOSING

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully submitted,

CARLSON, GASKEY & OLDS, P.C.

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Birmingham, Michigan 48009
(248) 988-8360

Dated: December 29, 2003

CERTIFICATE OF MAIL

I hereby certify that the enclosed Appeal Brief (in triplicate) is being deposited with the United States Postal Service in triplicate as First Class Mail, postage prepaid, in an envelope addressed to Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 29th day of December, 2003.

Beth A. Beard

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CLAIM APPENDIX

1. A valve assembly for a low pressure mold assembly comprising:

a port to a mold assembly;

a coupler for receipt of a mix head along a mix head axis;

a fluid flow passage from said coupler to said port; and

a piston which is substantially rectilinear in cross-section, said piston movable within said fluid flow passage along a first axis between a first position which allows flow from said coupler to said port, and a second position which seals said port.

2. The valve assembly as recited in claim 1, wherein said piston is substantially square in cross-section.

3. The valve assembly as recited in claim 1, wherein said port includes a port end portion which is angled relative to said first axis.

4. The valve assembly as recited in claim 3, wherein said piston includes a piston end portion which is angled relative to said first axis.

5. The valve assembly as recited in claim 1, wherein said fluid flow passage includes a first flow passage along said first axis and a second flow passage substantially perpendicular to said first axis.

6. The valve assembly as recited in claim 1, wherein said second passage includes a first second passage portion within a coupler head, and a second second passage portion within the mix head.

7. The valve assembly as recited in claim 5, further including a second piston movable within said second flow passage.

8. The valve assembly as recited in claim 7, wherein said second piston is substantially circular in cross section.

9. The valve assembly as recited in claim 7, wherein said fluid flow passage includes a third flow passage which communicates with said second flow passage in a substantially perpendicular relationship.

10. The valve assembly as recited in claim 9, wherein said second piston is movable between a first position which allows flow from said third flow passage to said second flow passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

11. The valve assembly as recited in claim 1, further including a lock assembly within said coupler, said lock assembly engageable with the mix head.

12. A low pressure mold assembly for receipt of a mix head comprising:

a port to the mold assembly;

a coupler for receipt of the mix head along a mix head axis;

a fluid flow passage from said coupler to said port, said fluid flow passage including a first flow passage defining a first axis and a second flow passage substantially parallel to said mix head axis; and

a piston substantially rectilinear in cross-section, said piston movable within said fluid flow passage along said first axis between a first position which allows flow from said mix head to said port, and a second position which seals said port.

13. The mold assembly as recited in claim 12, wherein said piston is substantially square in cross-section.

14. The mold assembly as recited in claim 12, wherein said port includes a port end portion which is angled relative to said first axis.

15. The mold assembly as recited in claim 14, wherein said piston includes a piston end portion which is angled relative to said first axis.

16. The mold assembly as recited in claim 12, wherein said second passage includes a first, second passage portion within the mix head, and a second, second passage portion within said coupler.

17. The mold assembly as recited in claim 16, further including a second piston movable from said first, second passage portion to said second, second passage portion.

18. The mold assembly as recited in claim 12, further including a second piston movable within said second flow passage.

19. The mold assembly as recited in claim 18, wherein said second piston is substantially circular in cross section.

20. The mold assembly as recited in claim 12, wherein the mix head includes a third flow passage which communicates with said second flow passage in a substantially perpendicular relationship.

21. The mold assembly as recited in claim 20, wherein said second piston is movable between a first position which allows flow from said third flow passage to said second flow passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

22. A low pressure mold system comprising:

a mold assembly;

a port to the mold assembly;

a coupler for receipt of a mix head along a mix head axis said coupler including a first flow passage defining a first axis substantially perpendicular to said mix head axis;

a piston which is substantially rectilinear in cross-section, said piston movable within said passage along said first axis between a first position which allows flow from said coupler to said port, and a second position which seals said port;

a locking assembly for removably attaching said mix head to said coupler;

said mix head including a second flow passage substantially parallel to said mix head axis; and

a second piston movable within said second flow passage.

23. The valve assembly as recited in claim 22, wherein said mix head includes a third flow passage, said second piston movable between a first position which allows flow from said third flow passage to said second passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

24. The mold assembly as recited in claim 22, wherein said piston is substantially square in cross-section.

25. The mold assembly as recited in claim 22, wherein said port includes a port end portion which is angled relative to said first axis.

26. The mold assembly as recited in claim 25, wherein said piston includes a piston end portion which is angled relative to said first axis.

27. The valve assembly as recited in claim 1, wherein said piston comprises a piston end portion angled away from said mix head axis.

28. The valve assembly as recited in claim 1, further comprising a lock assembly within said coupler, said lock assembly engageable with an outer perimeter of the mix head.

29. The valve assembly as recited in claim 12, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage.

30. The valve assembly as recited in claim 12, further comprising a lock assembly within said coupler, said lock assembly engageable with an outer perimeter of the mix head.

31. The valve assembly as recited in claim 22, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage.

32. The valve assembly as recited in claim 22, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage to shear across said second flow passage.

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The valve assembly 26 includes a coupler 28 to removably attach the mix head 20 to the mold assembly 22. The coupler 28 is attached to a mold port 30 such that the matrix from the mix head 20 communicates through a fluid flow passage 32 and to the mold cavity 24. The fluid flow passage 32 includes a first flow passage 34 which defines a first axis 35 and a second flow passage 36 substantially perpendicular to the first axis 35. *[See specification paragraph 24.]*

A piston 38 which is rectilinear in cross section (Figure 3) is movable within the first flow passage 34 along the first axis 35. The piston 38 is substantially square in cross-section (Figure 3) such that the piston 38 fits closely within the first flow passage 34. By providing the piston 38 with straight walls, remnants of the matrix are more effectively wiped from the passage 34 and driven into the mold cavity 24. In addition, the piston 38 forms an effective seal at the intersection between the first flow passage 34 and the second flow passage 36. *[See specification paragraph 25.]*

Figure 5A illustrates the matrix flow path (illustrated schematically by arrows m) during matrix injection into the mold cavity. After injection is complete, a second piston 44 is driven to seal the third flow passage 56 (Figure 5B). As illustrated in Figure 5B, the second piston extends from the mix head second flow passage 36' and into the coupler 28 second flow passage 36. In other words, the second piston 44 meets the first flow passage 39 in a substantially perpendicular orientation. Simultaneously remnants of the matrix which remain in the second flow passage 36', 36 are driven into the first flow passage 34 by the piston 44. Notably, the second piston 44 has been driven past the mix head second flow passage 36' and into the coupler flow passage 36. In other words, the second piston 44 assures that the second flow passage 36' is clear of matrix remnants. *[See specification paragraphs 31-32.]*

Referring to Figure 5C, piston 38 is driven toward the mold port 30 by actuator 40. Notably, the orientation of the first piston 38 and second piston 44 provides for the first piston 38 to wipe matrix remnants from a face of the second piston 44. The seal between piston 38 and mold port 30

is now complete and the molded article cures within the cavity 24. The coupler 28 is thus clear of remnants without the heretofore necessity of flushing. *[See specification paragraph 33.]*

ISSUES

A. 35 U.S.C. 102(b)

Is the final rejection of Claims 1, 3-9, 12, and 14-20 under 35 U.S.C. §102(b) proper as being anticipated by *Nennecker (5,498,151)?*

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B. 35 U.S.C. 102(b)

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III. Claims 8 and 19 stand or fall together for purposes of this appeal, i.e., claims 8 and 19 stand or fall independently of claim 1 for purposes of this appeal.

ARGUMENTS

A. 35 U.S.C. 102

i) Claim 1

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ii) *Claim 8*

Claim group II, as represented by Claim 8 recites that "said second piston is substantially circular in cross section." As further support to Appellant's argument with regard to the proper interpretation of "cross-section", Appellant points to the terminology within claim 8. Were the

Examiner's interpretation reasonable, the interpretation would also apply to claim 8. However, the only interpretation of a cross-section that will obtain a substantially circular cross-section of a cylindrical piston is a cross-section across the piston axis as Appellant argues above.

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B. 35 U.S.C. 103

i) Claim 2

Claim group III, as represented by Claim 2 recites "said piston is substantially square in cross-section." Here the Examiner admits that neither *Nennecker* (23 July 2003 office action, page 3) nor *Gumery* (23 July 2003 office action, page 4) does not show a piston that is square in cross section. Again, the unreasonableness of the Examiner's initial interpretation of where the cross-section is taken is exposed by the properly located cross-section for this rejection.

In an attempt to overcome the limitations of the cited references, the Examiner suggests that changes in shape not effecting the operation of the device is considered within the skill of the ordinary artisan. The Examiner points to the Dailey case, however, this case is a 1966 case from the United States Court of Customs and Patent Appeals and is not binding case law at all at this point. The Examiner is essentially suggesting that it is inherently obvious to change the shape of an element without any support in the prior art. This is improper. Moreover, as distinguished from the Dailey case, the rectilinear shape of Appellant's device does affect operation and provides numerous advantages which are not suggested by the cited references. Some of these advantages are disclosed

in paragraph [25] of the present application. Appellant respectfully requests that the rejections be withdrawn.

CLOSING

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully submitted,

CARLSON, GASKEY & OLDS, P.C.

DAVID L. WISZ
Registration No. 46,350
Attorneys for Appellant
400 West Maple, Suite 350
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Dated: December 29, 2003

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Beth A. Beard

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CLAIM APPENDIX

1. A valve assembly for a low pressure mold assembly comprising:

a port to a mold assembly;

a coupler for receipt of a mix head along a mix head axis;

a fluid flow passage from said coupler to said port; and

a piston which is substantially rectilinear in cross-section, said piston movable within said fluid flow passage along a first axis between a first position which allows flow from said coupler to said port, and a second position which seals said port.

2. The valve assembly as recited in claim 1, wherein said piston is substantially square in cross-section.

3. The valve assembly as recited in claim 1, wherein said port includes a port end portion which is angled relative to said first axis.

4. The valve assembly as recited in claim 3, wherein said piston includes a piston end portion which is angled relative to said first axis.

5. The valve assembly as recited in claim 1, wherein said fluid flow passage includes a first flow passage along said first axis and a second flow passage substantially perpendicular to said first axis.

6. The valve assembly as recited in claim 1, wherein said second passage includes a first second passage portion within a coupler head, and a second second passage portion within the mix head.

7. The valve assembly as recited in claim 5, further including a second piston movable within said second flow passage.

8. The valve assembly as recited in claim 7, wherein said second piston is substantially circular in cross section.

9. The valve assembly as recited in claim 7, wherein said fluid flow passage includes a third flow passage which communicates with said second flow passage in a substantially perpendicular relationship.

10. The valve assembly as recited in claim 9, wherein said second piston is movable between a first position which allows flow from said third flow passage to said second flow passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

11. The valve assembly as recited in claim 1, further including a lock assembly within said coupler, said lock assembly engageable with the mix head.

12. A low pressure mold assembly for receipt of a mix head comprising:

a port to the mold assembly;

a coupler for receipt of the mix head along a mix head axis;

a fluid flow passage from said coupler to said port, said fluid flow passage including a first flow passage defining a first axis and a second flow passage substantially parallel to said mix head axis; and

a piston substantially rectilinear in cross-section, said piston movable within said fluid flow passage along said first axis between a first position which allows flow from said mix head to said port, and a second position which seals said port.

13. The mold assembly as recited in claim 12, wherein said piston is substantially square in cross-section.

14. The mold assembly as recited in claim 12, wherein said port includes a port end portion which is angled relative to said first axis.

15. The mold assembly as recited in claim 14, wherein said piston includes a piston end portion which is angled relative to said first axis.

16. The mold assembly as recited in claim 12, wherein said second passage includes a first, second passage portion within the mix head, and a second, second passage portion within said coupler.

17. The mold assembly as recited in claim 16, further including a second piston movable from said first, second passage portion to said second, second passage portion.

18. The mold assembly as recited in claim 12, further including a second piston movable within said second flow passage.

19. The mold assembly as recited in claim 18, wherein said second piston is substantially circular in cross section.

20. The mold assembly as recited in claim 12, wherein the mix head includes a third flow passage which communicates with said second flow passage in a substantially perpendicular relationship.

21. The mold assembly as recited in claim 20, wherein said second piston is movable between a first position which allows flow from said third flow passage to said second flow passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

22. A low pressure mold system comprising:

a mold assembly;

a port to the mold assembly;

a coupler for receipt of a mix head along a mix head axis said coupler including a first flow passage defining a first axis substantially perpendicular to said mix head axis;

a piston which is substantially rectilinear in cross-section, said piston movable within said passage along said first axis between a first position which allows flow from said coupler to said port, and a second position which seals said port;

a locking assembly for removably attaching said mix head to said coupler;

said mix head including a second flow passage substantially parallel to said mix head axis; and

a second piston movable within said second flow passage.

23. The valve assembly as recited in claim 22, wherein said mix head includes a third flow passage, said second piston movable between a first position which allows flow from said third flow passage to said second passage and a second position which prevents fluid flow from said third flow passage to said second flow passage.

24. The mold assembly as recited in claim 22, wherein said piston is substantially square in cross-section.

25. The mold assembly as recited in claim 22, wherein said port includes a port end portion which is angled relative to said first axis.

26. The mold assembly as recited in claim 25, wherein said piston includes a piston end portion which is angled relative to said first axis.

27. The valve assembly as recited in claim 1, wherein said piston comprises a piston end portion angled away from said mix head axis.

28. The valve assembly as recited in claim 1, further comprising a lock assembly within said coupler, said lock assembly engageable with an outer perimeter of the mix head.

29. The valve assembly as recited in claim 12, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage.

30. The valve assembly as recited in claim 12, further comprising a lock assembly within said coupler, said lock assembly engageable with an outer perimeter of the mix head.

31. The valve assembly as recited in claim 22, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage.

32. The valve assembly as recited in claim 22, wherein said piston comprises a piston end portion angled away from an intersection between said first flow passage and said second flow passage to shear across said second flow passage.